FS Series Flow Switches

User Manual

YUANBEN
源本

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User Manual of FS series Flow Switches

Description

FS series flow switches is low cost switches with proven accuracy, ideal for critical low flow or high flow protection applications such as pump seal cooling water, pump inlet flow protection, cooling circuit protection, High and low flow rate alarm, valve failure, pump starting or failure, pipe blockage or rupture. Using these in-line flow switches to monitor min/max values of liquid flow in order to switches a valve or to establish an on or off control loop, electrical circuit is isolated from the fluid path. It is produced in Shanghai yuanben magnetoelectric tech. Co., ltd.

The operating principle is based on a free-floating magnetic piston, which responds only to the motion of fluid within the pipe line. Not to static or system pressure, in the presence of fluid flow, controlled movement of the piston actuates an external hermetically sealed reed switch, thus producing the required signal this signal can be used to actuate audible or visual alarms as well as relays or other

A piston operated flow switch is a device which utilizes the force exerted on a piston of flow switch in a flowing fluid to actuate an electric switch at a predetermined rate of flow. The electric switch may be used to start or stop pumps, open or close valves, actuate a warning lamp, sound on alarm, etc.

There is two switches mode i.e. normal open or normal closed, while flow switches is mounted in ordering orientation, there is not fluid in-line pipe, the switches is on normal condition, if the flow switches is closed, we name the switches is normal closed; if the flow switches is opened, we name the switches is normal open.
The setting flow is in 100mL/min to 200 L/min ranges, it is made of stainless steel or brass material, the mounting thread can be selected G1/8", NPT1/2", BSPP1/2", BSPT1/2", NPT3/4", BSP3/4", NPT1",NPT2" Female or male thread.
These model are fixed flow switches, the flow set point is fixed at our company, and is not field adjustable. (The field adjustable flow switches is developing now)
The universal units can be mounting horizontally or vertically orientation, but there is some difference, please advice mounting orientation while ordering, so that our company can calibrate in the required orientation as calibration. Proper calibration of the set point requires the follows information
Calibration set point
Increasing or decreasing flow alarm
Fluid type i.e. liquid or gas Density or specific gravity
Viscosity
System pressure and temperature
Flow direction i.e. upward or downward
Mounting orientation i.e. horizontal or vertical

The mini flow switches are suitable for application with a variety of process fluids. The flow switches are available with a wide range of flow actuation points for all standard pipe sizes, especially suitable for mini or most-low flow switches which are explosion-proof and "CCC" approved.

The FS600 series mini flow switch differs in its operation as increasing flow displaces a piston against a return spring. The operating piston does result in a higher pressure drop because the FS600 series

mini flow switches don’t have a return spring.
Installation: Install the flow switches with the index or the switch body pointing in the direction of flow.
While considering selection of a flow switch, FS100 series FS200 series are selected. The pipe material of FS100 series is plastic.
For the higher flows uncounted in pipe sizes of 3/4″, the pipe material of FS200 series is copper.

Model and Simplex

Model	Simplex					Feature
FS Flow Switches	□	□	□	□	□	
						Testing Flow mode, piston (Ignore)
	F					Float
		A				Setting flow rating adjustable
		B				Setting flow rating no-adjustable (Ignore)
			100			Housing structure and Material
				90		Setting Flow rating (L/h)
					300	Cable and length
					M8	M8 or M12 connector

Feature

Easy to install, inspect and maintain
Compact design for vertical or horizontal installations, inline or plugged
Detects clogged A/C condensate drains and shuts off the system
Can be installed to activate audible and/or visual alarm circuitry
6' lead wires, 3/4" plug, 3/4" slip × 3/4" MNPT adapter and 1" × 3/4" reducer bushing included
Suitable for 24VAC, 1.5 Amp maximum

The Specification of Flow Switches

Parts name and Item	Material and parameter	Material and parameter	Material and parameter	Material and parameter	Material and parameter
Model code	FS-100	FS-200	FS-300	FS-400	FS-500
Product No.					
Fitting	NPT3/4”	NPT3/4”	NPT3/4”	NPT1/2”	1/2" NPT
Structure and material of Housing	Rectangular Plastic PPR	Rectangular Brass	In-Line SUS304	In-Line SUS304	Rectangular Brass
Operating pressure	120 PSI max	150 PSI max	250 PSI max	250 PSI max	140 PSI max
Temperature range	-10~80℃	-10~120℃	-20~120℃	-20~120℃	-20~120℃'
Medium (Liquid)	Clean water	Clean water	Clean water	Clean water	Clean water
Contact Form	Form A S.P.S.T.	Form A S.P.S.T.	Form A S.P.S.T.	Form A S.P.S.T.	Form A S.P.S.T.
Carry current	1.5A	1.5A	1.5A	1.5A	1.0A
Switch current	0.8Amax	0.8Amax	0.8Amax	0.8Amax	0.7Amax
Switch voltage	250Vdc	250Vdc	250Vdc	250Vdc	220Vac
Power rating	50AV	50AV	50AV	50AV	50AV
Lead wire((as client required))	AWG 22, 300mm length, UL1430, lead wire free terminal	AWG 22, 300mm length, UL1430, lead wire free terminal	AWG 22, 300mm length, UL1430, lead wire free terminal	AWG 22, 300mm length, UL1430, lead wire free terminal	AWG 22, 300mm length, UL1430, lead wire free terminal
Operating flow rating	1.5L/min	1.0~8L/min	1.0~6L/min	1.0~4L/min	1.0~6L/min
Setting flow value Accuracy	±10%	±10%	±10%	±10%	±10%
Mounting orientation (Vertical or Horizontal.)	As signal of flow direction Mounting orientation	As signal of flow direction Mounting orientation	As signal of flow direction Mounting orientation	As signal of flow direction Mounting orientation	As signal of flow direction, Mounting orientation at any orientation
Maximum flow	15L/min(Pressure Drop is 10 PIS)	20L/min(Pressure Drop is 10 PIS)	10L/min(Pressure Drop is 12 PIS)	10L/min(Pressure Drop is 10 PIS)	8~15L/min(Pressure Drop is 10 PIS)
Wire color	Black color	Black color	Black color	Black color	Black color
Mounting Shock	30 g for 11ms duration	30 g for 11ms duration	30 g for 11ms duration	30 g for 11ms duration	30 g for 11ms duration
Mounting Vibration	35 up to 500 Hz	35 up to 500 Hz	35 up to 500 Hz	35 up to 500 Hz	35 up to 500 Hz
Duration of cycle	100,000 pcs.	100,000 pcs.	100,000 pcs.	100,000 pcs.	100,000 pcs.

Parts name and Item	Material and parameter	Material and parameter	Material and parameter	Material and parameter	Material and parameter
Model code	FS-600	FS-700	FS-902	FS-903	FS-904
Product No.					
Fitting	G1/8"	dia.15 pipe	BSP1/2" in, BSPF1/2" out	BSP1/2” in, BSP1/2" out	BSPF 1/2" in, BSPF1/2" out
Structure and material of Housing	In-Line SS304	In-Line C3200	In-Line Plastic PBT	In-Line Plastic PBT	In-Line Plastic
Operating pressure	120 PSI max	150 PSI max	250 PSI max	250 PSI max	140 PSI max
Temperature range	-10~80℃'	-10~120℃	-20~120℃	-20~120℃	-20~120℃'
Medium (Liquid)	Clean water	Clean water	Clean water	Clean water	Clean water
Contact Form	Form A S.P.S.T.	Form A S.P.S.T.	Form A S.P.S.T.	Form A S.P.S.T.	Form A S.P.S.T.
Carry current	1.5A	1.5A	1.5A	1.5A	1.0A
Switch current	0.8Amax	0.8Amax	0.8Amax	0.8Amax	0.7Amax
Switch voltage	250Vdc	250Vdc	250Vdc	250Vdc	220Vac
Power rating	50AV	50AV	50AV	50AV	50AV
Lead wire	AWG 22, 300mm length, UL1430, lead wire free terminal (as client required)	AWG 22, 300mm length, UL1430, lead wire free terminal(as client required)	AWG 22, 300mm length, UL1430, lead wire free terminal(as client required)	AWG 22, 300mm length, UL1430, lead wire free terminal (as client required)	AWG 22, 300mm length, UL1430, lead wire free terminal (as client required)
Operating flow rating	50mL/min~0.5 L/min	0.75~4L/min	0.75~4L/min	4.0~8L/min	2.0~5L/min
Setting flow value Accuracy	±10%	±10%	±10%	±10%	±10%
Mounting orientation (Vertical or Horizontal.)	As signal of flow direction Mounting orientation	As signal of flow direction Mounting orientation	As signal of flow direction Mounting orientation	As signal of flow direction vertical Mounting	As signal of flow direction, Mounting orientation
Maximum flow	2.5L/min(Press ure Drop is 10 PIS)	20L/min(Pres sure Drop is 10 PIS)	20L/min(Pres sure Drop is 12 PIS)	25L/min(Pres sure Drop is 10 PIS)	8~15L/min(Pres sure Drop is 10 PIS)
Wire color	Black color	Black color	Black color	Black color	Black color

Mounting Shock	30 g for 11ms duration	30 g for 11ms duration	30 g for 11ms duration	30 g for 11ms duration	30 g for 11ms duration
Mounting Vibration	35 up to 500 Hz	35 up to 500 Hz	35 up to 500 Hz	35 up to 500 Hz	35 up to 500 Hz
Duration of Cycle	100,000 pcs.	100,000 pcs.	100,000 pcs.	100,000 pcs.	100,000 pcs.

Parts name and Item	Material and parameter	Material and parameter
Model code	FS-1000	FS-2000
Product No.		
Fitting	NPT1"	NPT2"
Structure and material of Housing	In-Line SS304	In-Line SUS304
Operating pressure	150 PSI max	150 PSI max
Temperature range	-10~80℃'	-10~120℃
Medium (Liquid)	Clean water	Clean water
Contact Form	Form A S.P.S.T.	Form A S.P.S.T.
Carry current	1.5A	1.5A
Switch current	0.8Amax	0.8Amax
Switch voltage	250Vdc	250Vdc
Power rating	50AV	50AV
Lead wire	AWG 22, 300mm length, UL1430, lead wire free terminal (as client required)	AWG 22, 300mm length, UL1430, lead wire free terminal(as client required)
Operating flow rating	50mL/min~0.5L/min	0.75~4L/min
Setting flow value Accuracy	±10%	±10%
Mounting orientation (Vertical or Horizontal.)	As signal of flow direction Mounting orientation	As signal of flow direction Mounting orientation
Maximum flow	2.5L/min(Pressure Drop is 10 PIS)	20L/min(Pressure Drop is 10 PIS)
Wire color	Black color	Black color
Mounting Shock	30 g for 11ms duration	30 g for 11ms duration
Mounting Vibration	35 up to 500 Hz	35 up to 500 Hz
Duration of Cycle	100,000 pcs.	100,000 pcs.

Mounting and operating of Flow switches

Note: Our products must be maintained and installed in strict accordance with the National Electrical Code and the applicable our product instruction Bulletin that covers installation, operation and proper maintenance. Failure to observe this information may result in serious injury or damages.

For hazardous area applications involving such things as, but not limited to, ignitable mixtures, combustible dust and flammable materials, use an appropriate explosion proof enclosure or intrinsically safe interface device.

Please adhere to the pressure and temperature limitations shown throughout this catalog for our level and flow sensors. These limitations must not be exceeded. These pressures and temperatures take into consideration possible system surge pressures/ temperatures and their frequencies.

Selection of materials for compatibility with the media is critical to the life and operation of our products. Take care in the proper selection of materials of construction, testing is required.

Stainless steel is generally regarded as safe by NSF and FDA, but no certified.

Life expectancy of switch contacts varies with application. Contact us if life cycle testing is required.

Ambient temperature changes do affect switch set points, since the gravity of a liquid can vary with temperature.

Our sensors have been designed to resist shock and vibration. However, shock and vibration should be minimized.

Filter liquid media containing particulate and/or debris to ensure the proper operation of our products.

Electrical entries and mounting points in an enclosed tank may require liquid/vapor sealing.

Our sensors must not be field-repaired.

Physical damage sustained by product may render it unserviceable.